

# How to Refit Hand Saws and Bow Saws

Examine your saw carefully before attempting to sharpen it. There are two general types of hand saws—"crosscut" for cutting across the grain of wood and "rip" for cutting with the grain of wood. A crosscut saw has the teeth filed at an angle that cut like knives. A rip saw has the teeth filed straight across the saw at right angle to the blade that cut like chisels. A saw will not give good service or cut correctly unless the teeth are the same length, properly shaped and properly set.

It is unnecessary to reset the teeth of a saw every time it needs sharpening, and a saw ordinarily may be filed at least four or five times before it needs resetting. In filing a new saw, every effort should be made to preserve the original shape of the teeth.

Follow these steps when refitting your saw:

1. Jointing
2. Shaping
3. Setting
4. Sharpening

## JOINTING THE HAND SAW

When the teeth are uneven or incorrectly shaped or when the tooth edge is not straight (as in Figure 1), the top edges must be filed down to the same level before sharpening. This is called jointing.

Low teeth do no work whereas the projecting teeth dig in excessively and cause the saw to run unevenly.

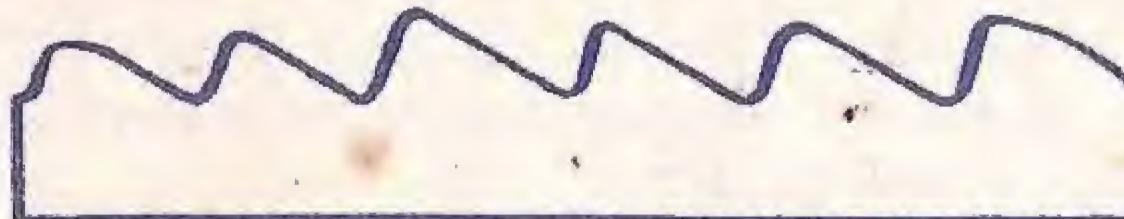


Fig. 1

Place the saw in a clamp. Use a regular hand saw vise, (Figure 2). If not available, you can fit the saw between two boards in a wood vise. Run a mill file lightly back and forth the length of the blade; or use a regular saw jointer such as Sears No. 9-4882 shown in Figure 3. The jointer is preferable because it holds the file squarely on the teeth edges and eliminates all chances of tipping and rounding the teeth.

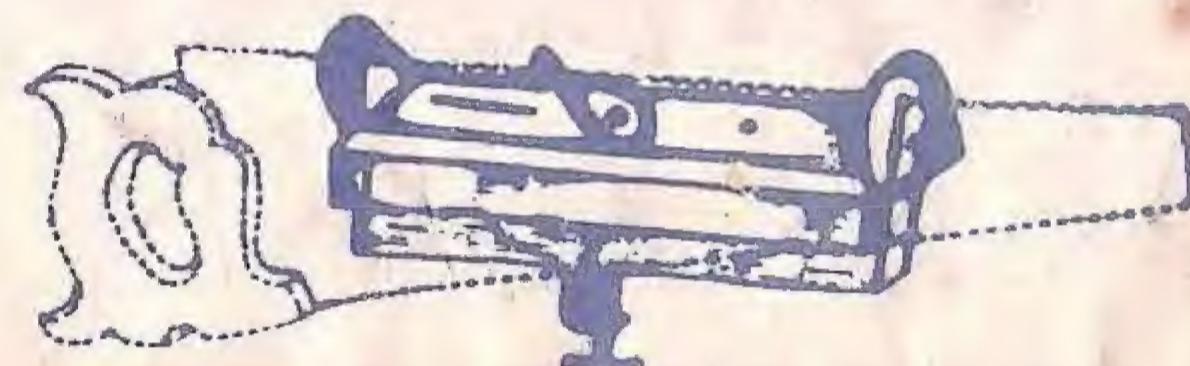


Fig. 2



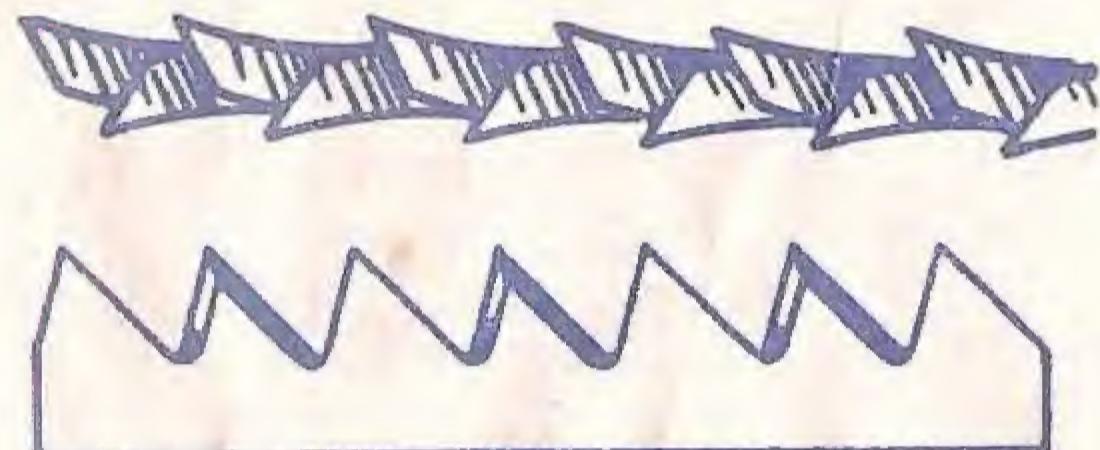
Fig. 3

Under ordinary circumstances, filing is continued until the file touches the top of every tooth. On an especially bad job where the teeth are very uneven, it is best not to make them all the same height in one jointing. Joint only the highest teeth first, THEN SHAPE—NOT SHARPEN these teeth. Then joint all teeth of saw to same height.

## SHAPING THE TEETH

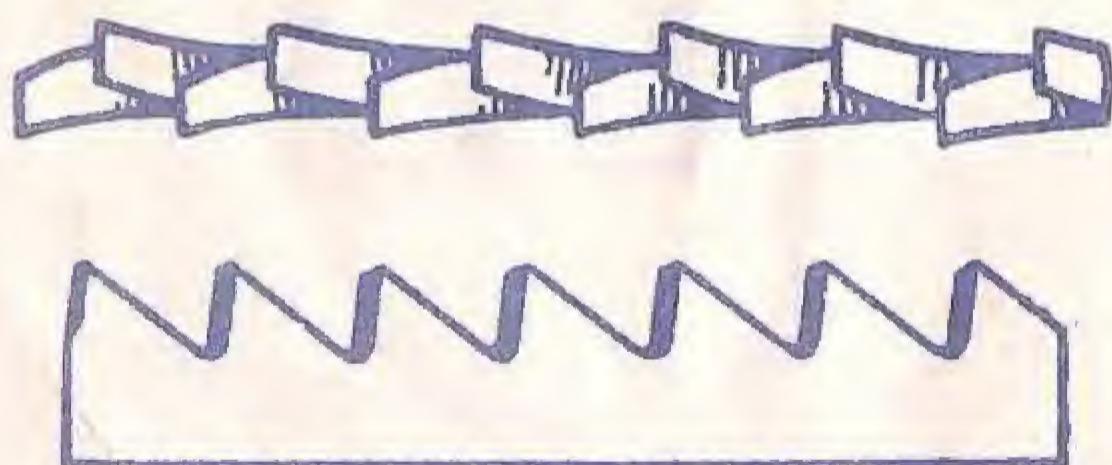
To be done only when the saw has been jointed. The workman should, of course, have a clear picture in his mind of the correct shape of the tooth before attempting to file a saw. Refer to Figures 4 and 5. For best sawing results, gullets or recesses between saw teeth must be of equal depth. The fronts and backs of all teeth must have the proper shape and angle and the teeth must be uniform in size.

Place the file well down in the gullet and file straight across the saw at right angle to the blade. Use long, even strokes; cut only on the forward stroke and raise the file each time on the return stroke. (An excellent file handle is Sears No. 9-6781 which threads itself on to the tang of the file.) If the teeth are of unequal size, press the file against the teeth having the largest tops, until you reach the center of the flat surface made by jointing. Then move the file to the next gullet, and file



### CROSS CUT TEETH

Fig. 4



### RIP TEETH

Fig. 5

Use a slim taper, triangular-shaped file, which suits or fits between the teeth. The following suggestions as to kind and size of file will give the best results.

(The point of the saw is determined by the number of tooth points to an inch.)

Number of Points	Files Recommended
5	7" Taper Regular
6	7" or 8" Slim
7	6" or 7" Slim
8	7" Extra Slim 6" Slim 8" Double Extra Slim
9	6" Extra Slim 7" Double Extra Slim
10	5" or 6" Extra Slim
11	5" Extra Slim 6" Double Extra Slim
12	4½" or 5" Extra Slim
13, 14	4½" Extra Slim 5" Double Extra Slim
15, 16	4" Double Extra Slim

Fig. 6

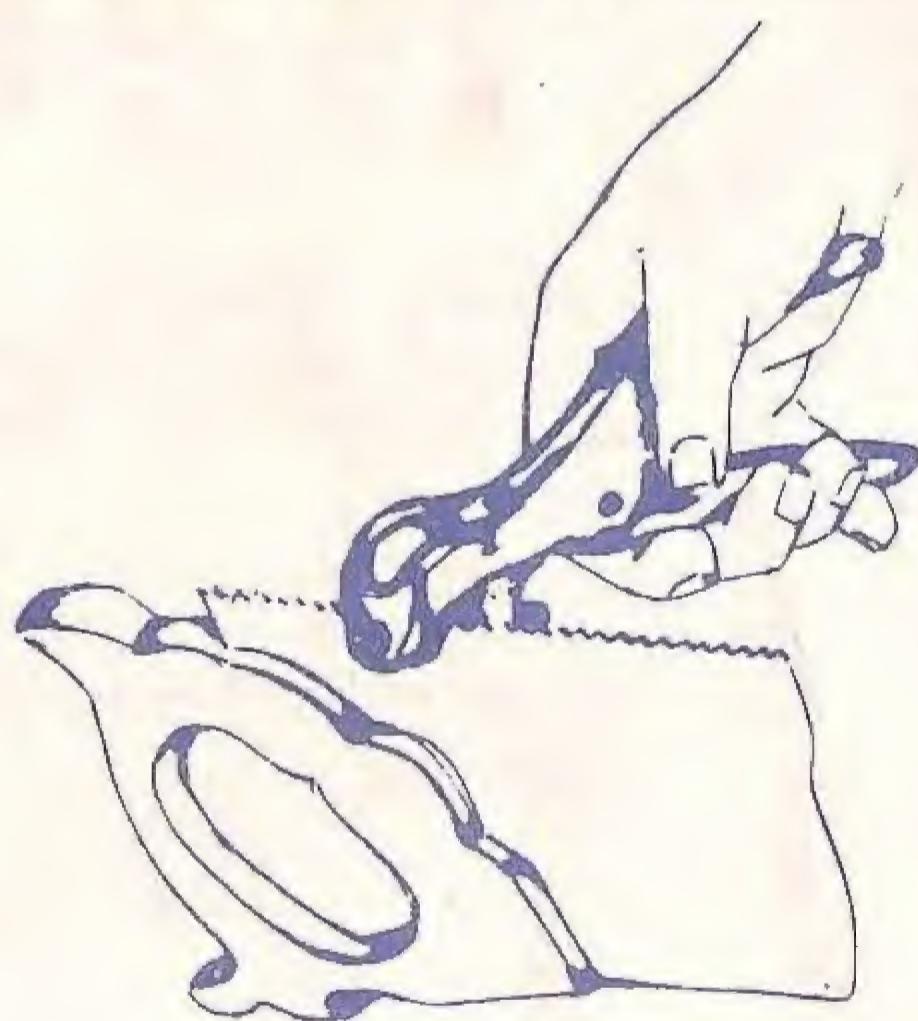
until the balance of the top disappears and the tooth has been brought to a point. Bear in mind that the teeth must be all alike in size and shape to cut equal amounts of wood and make the saw operate smoothly. When all the teeth have been properly shaped and jointed, you're ready to set them.

## SETTING THE TEETH

The purpose of setting saw teeth, that is, springing over the upper part of each tooth, one to the right, the next to the left, the entire length of the saw edge (as in Figures 4 and 5), is to make the saw cut a kerf slightly wider than the thickness of the blade, to give clearance and prevent friction which would cause the saw to bind and be hard to pull.

Remember: If setting is required, it makes no difference whether the saw is fine or coarse. The depth of the set should not go lower than half the length of the tooth. If the set runs deeper, it is almost sure to spring, crimp or crack the blade, if it does not break out the tooth.

In starting out with a saw set (similar to Sears No. 9-4880) first determine the number of teeth per inch of your saw and set the anvil of the set to the same number. Next, adjust the gauge screw under plunger so saw blade passes easily between end of saw and anvil.



## HAND SAW SET'S

Fig. 7

Starting at one end, set each alternate tooth by pressing lever. The direction of the saw is correct when thin cutting edges of teeth are bent outward. Continue until

you reach the end of the saw, then reverse the direction of the saw in the vise and set remaining alternate teeth in the opposite direction.

In setting teeth, particular care must be taken to see that the set is regular. It must be the same width from end to end of the blade, otherwise, the saw will not cut true; it will run out of line and the cut will be "snaky". Sometimes complaints have been made that a saw is soft and will not hold an edge, when actually the trouble is the irregularity of the width of the set.

## FILING CROSSCUT SAW (fig. 4)

Select a three cornered file which when placed in the gullet will lie flat on back of one tooth and on front of other tooth. (See Chart - Fig. 6)

Slide saw filing guide on from end of saw to one of the unused teeth near the handle, (Fig. 8) to establish the correct angle, usually about  $25^{\circ}$  and set your filing guide. Start at the point of the saw. Place the file in the gullet to the left of the first tooth set towards you. Use a firm pressure on the forward stroke and lift the file slightly on the back stroke. Each stroke should file the back of tooth to the left and front of tooth to the right. Continue filing every other tooth on this side of saw, then reverse blade and file alternate teeth on the other side. Continue filing until a sharp point is formed. After filing it is a good idea to lay the saw flat on a bench and run an oilstone very gently over the sides of the teeth. This will correct small inaccuracies in setting, remove any burrs or wire edge that may be present, and make the saw cut more smoothly.

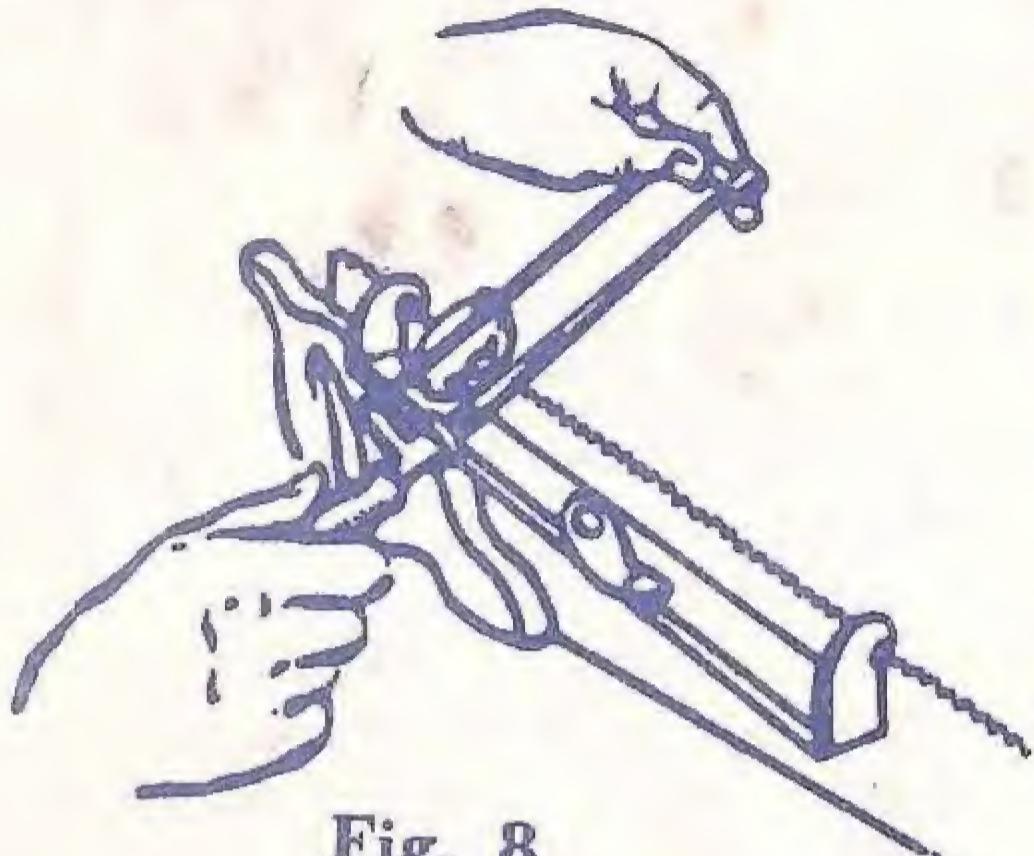


Fig. 8

## FILING HAND SAWS (Rip)

With but one difference, rip saws are filed like crosscut saws. They are filed with the file held *straight across* the saw, at right angles to the blade.

After completing the filing job, it's a good idea to lay the saw flat on a bench and run an oilstone very gently over the sides of the teeth. This will correct small inaccuracies in setting, remove any burrs or wire edge that may be present, and make the saw cut more smoothly.

## SHARPENING BOW OR PULPWOOD SAW BLADES

Sharpen the cutting teeth by filing the knife edges in the same place and in the same way as originally filed. The teeth should be filed just enough to give a razor like cutting edge and all teeth should be filed the same amount for fast smooth cutting. The raker teeth should be filed only after the cutting teeth have been worn down until there is not enough raker clearance. The correct raker clearance is about the thickness of the back edge of the blade. The rakers are filed by filing directly across the saw, being careful to keep the original shape of the raker.

A fine, smooth cutting file such as the 6" cant saw file should be used for sharpening

the blade. Care must be taken when filing one tooth not to damage the next tooth. Also, be careful not to file out the radius at the root of the tooth and get a sharp corner as this will weaken the tooth and cause it to break off in hard service.

It is very important to keep the blade properly set. The set should be kept the same as when purchased. The correct set on each side is about equal to the thickness of the thin edge of the blade. Do not set the raker teeth. The "Hand Saw Set No. 9-4880" which are available at Sears, Roebuck retail or mail order stores, is the proper tool for setting the cutting teeth.

Always keep the blade properly tensioned. A blade that is not properly tensioned will not cut fast and straight and will possibly snap in hard sawing.

Sometimes the blade may have a tendency to go to one side. This can be corrected if you stroke the teeth with a fine file all along the blade on the side to which the blade tends to go.

Give the blade a light coating of oil to prevent rust when stored for an indefinite length of time; also relieve the tension. This will increase its life.

Always keep spare blades available to prevent delays due to blade breakage or time spent in sharpening.

## SAW TOOLS

In reworking your saw, use only the best of tools. These you will find in Sears General Catalog or in Sears Retail Stores. Always clean and oil saws when not in use.